Voltec

Power Inverter Owner's Manual

200W
(Model #: 10-00476)

400W
(Model #: 10-00477)

750W
(Model #: 10-00479)

1000W
(Model #: 10-00480)

1500W
(Model #: 10-00481)

2000W
(Model #: 10-00482)

3000W
(Model #: 10-00483)

Thank you for purchasing this VOLTEC product. All VOLTEC products are produced to the highest quality. To reduce the risk of injury, please read this instruction manual and retain for future reference.

Should you have any questions or need any support, please contact us at www.voltec-industries.com

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1. Introduction

Thank you for purchasing this VOLTEC power inverter, a high performance solution to using household power while on the road. Connected to a 12V volt outlet, the inverter efficiently and reliably supplies 115V/60Hz AC power for a wide variety of loads, such as TV sets, gaming systems, cell

phones and portable entertainment devices. Our line of power inverters are designed to meet and exceed your quality expectations with ETL certification. With proper care and appropriate usage, this inverter will give you years of dependable service in your car, truck, RV and boat.

2. Important Safety Information

For safe and optimum performance, the inverter must be installed and used properly. Carefully read and follow the guidelines below:

Warning

The inverter produces the same AC power as normal household outlets and thus has a shock hazard. Please do not allow children to use the inverters unattended

- Be sure that there is at least 2 in (5cm) of unobstructed air space around the entire surface (top and sides) of the inverter at all times. During use, do not place materials that could be damaged by heat near the unit.
- Do not operate the unit near flammable fumes or gases, such as near propane tanks
- Do not operate the unit in an enclosed area that contains lead-acid batteries. This type of battery emits explosive hydrogen gas which can be ignited by spark.
- Connect AC devices before DC ones or the components built into the inverter can become energized producing an electrical shock hazard.
- Do not connect the unit to live AC power circuits or there would be

damage to the inverter.

- Connect the unit to only to 12V DC power supplies (6V is too low, and 24V will damage the unit).
- Do not insert any foreign objects into the unit outlets, vents or fan openings.
- Do not expose the unit to rain, water or any other liquid.
- Do not connect the unit to any utility power distribution systems or branch circuits.
- Do not use the inverter in temperatures over 104(40) or under 32(0).

Caution

Do not use the unit on the following items:

- Small nickel-cadmium battery-operated appliances such as flashlights, razors and nightlights
- Battery chargers for battery packs used in hand power tool that have a warning label indicating dangerous voltages are present at the battery terminals.

Caution – 2000W and 3000W

When using ABOVE 1000W, please make sure you use the same standard cable kits and same standard battery or battery kits. Failure to do so will damage the inverter.

Failure to follow these safety guidelines may result in personal injury and/or the damage to the unit. It may also void the warranty.

3. Features

a) LED Indicator Models –200W, 400W and 750W

Fig. 1: DC Input Panel

1 Black terminal – negative DC power flow

2 Cooling Fan and Ventilation Openings - protects the inverter from over-heating.

3 Red terminal - positive DC power flow

Fig. 2: Indicators

4 Green LED Indicator – indicates the inverter has power.

5 Red LED Indicator— warns that the inverter has shut down due to low/high input voltage

6 Power Button — press to activate the unit

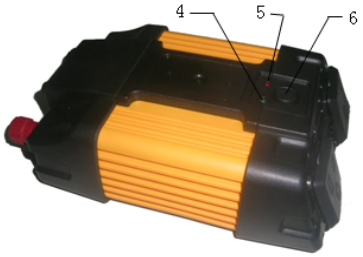

Fig.3: AC Outlet Panel

7 AC Outlets - receptacles for 120V AC products with a total continuous power equal to the wattage (W) of your inverter.

8 USB Port - Offer 5V power for USB equipment.

9 Ventilation Openings – never cover the ventilation openings.

Fig.4: Wiring

10 DC Cable with Clips—Connect the red clip to the positive terminal of the battery, and the black to the negative.

b) Digital Display Models – 1000W, 1500W and 2000W models

Figure 1

1. **AC Outlets—** receptacles for 120V AC products with a total continuous power equal to the wattage (W) of your inverter.
2. **Digital Readout—**it indicates the power and DC voltages. The allowed

power tolerance is 15% (with loads of over 200W), and the allowed voltage tolerance is +/-0.2V (no load).

3. **Power Button—** Connect the inverter to the DC power and press down the button power switch, the AC power is available.
4. **Port for Remote Control—**Connect the remote control switch and press down the switch, the remote control function acts.
5. **USB Port**— Offer 5V power to USB equipment.
6. **Red LED Indicator—** When the inverter has shut down because of low or high input voltage, the red LED indicator lights.
7. **Yellow LED Indicator —** When the power exceeds 1000W, the yellow LED indicator lights. When AC output power exceeds 1200W+/-100W, the over current protection function will act.
8. **Green LED Indicator—** When there is DC power input, the green LED indicator lights.
9. **Positive DC terminal—** Connect the red end of the DC power cord to it.
10. **Negative DC terminal—** Connect the black end of the DC power cord to it.
11. **Cooling Fan and Ventilation Openings—** The high speed cooling fan protects the inverter from over-heating. And the ventilation openings should be kept clear!
12. **Additional Protective Features**
    a) Over Input Voltage Shut Off - When the 12 volt DC power supply voltage exceeds 15.5±0.5 volts, the inverter will automatically shut down.
    b) Low Input Voltage Shut Off - When the 12 volt DC power supply voltage drops below 10.5±0.3volts, the inverter will automatically

shut down.

c) Low Input Voltage Alarm - When the 12 volt DC power supply voltage drops below 11±0.3volts, an audible alarm will sound.

d) Over Heating Self-lock - When the internal temperature exceeds the regulated temperature due to the increase of surrounding air temperature, the inverter will automatically shut down. When the internal temperature drops below the surrounding air temperature, the inverter will automatically return to normal operation.

4. Connecting and operating the inverter

When connecting the unit, please be sure to follow the guideline, cautions and warnings mentioned in this manual. The inverter should be connected to your vehicle's 12 V battery with DC clamp cables. No devices should be plugged into the inverter until the inverter is properly connected and the inverter's power indicator is active.

Please follow the following to connect your inverter:

1) Attach the ring type connector marked with red to the red (+) DC terminal and the ring connector marked with black to the black (-) DC terminal on the inerter.

Caution!

Reversing the polarity will damage to the inverter and void the warranty.

2) Tighten the nut on each DC terminal by hand until it is snug. Do not over-tighten.

3) Attach the black (-) clip to the black (-) battery terminal.

4) Attach the red (+) clip to the red (+) battery terminal. Make sure both clips are securely connected to the battery terminals, as a loose connection will cause the voltage to drop and may cause the cables to overheat, resulting in equipment damage or fire.

5) Turn on the inverter.

6) Plug the AC product(s) you wish to operate into the AC outlet(s) and switch them on, one at a time.

Caution!

If there are one more AC products connecting to the inverter, turn on the lager power product first.

7) If the Wattage draw of your devices exceeds the inverter's capacity, the unit will shut down and the indicator light will flash.

8) When the power inverter is not in use, disconnect the DC cable clips from the battery to prevent unintended battery discharge.

Caution

As the battery is used, its voltage begins to fall. When the inverter senses that the voltage at its DC input has dropped to the range of 10.7~11.3V DC, an audible alarm sounds. This allows time for computers or other sensitive devices to be shut down. If the audible alarm is ignored, the inverter will automatically shut down when the voltage dropped to the range of 10.2~10.8V DC, preventing the battery from being over-discharged. Turn off any devices that the inverter is powering. When input voltage rose to 11.7V~12.3V DC,

inverter restores normal. Although the inverter incorporates protection against over-voltage, if may still be damaged if the input voltage exceeds 16 volts.

Caution!

Most vehicle batteries are designed to provide short period of very high current for starting the engine. They are not designed for a constant “deep discharge”. Constantly operating the unit from a vehicle battery until the low voltage shut off will affect the life of the battery. If you are operating electrical products for extended periods of time, you should consider connecting the unit to a separate deep discharge battery.

5. Troubleshooting

a) Battery Operating Time

Operating time will vary depending on the charge level of the battery, its capacity and the power level drawn by the particular AC load. Below is a list of common appliances and their estimated consumption:

Appliances	Appliance Power Consumption (Watts)	Avg Life on Std Car Battery
100W Inverter	100	4.80
Printer	40	12.00
Small Scanner	40	12.00
13" TV	80	6.00
Game Console (PS2, X Box)	80	6.00
9" Electric Fan	70	6.86
Personal DVD Players	15	32.00

Cell Phone	3	160.00
Rechargeable Toothbrush	2	240.00
iPod	2	240.00
Wireless/BT Headphones	5	96.00
Digital Camera	2	240.00
AM/FM Radio	5	96.00
Sattelite Receiver	25	19.20
DVD Player/ VCR	35	13.71
Electric Knife	85	5.65
PSP	16	30.00
Nintendo DS	12	40.00
Rechargable Electric Knife	10	48.00
Household Battery Chargers	15	32.00
2 way Radios	10	48.00
5" LCD TV	10	48.00
BlackBerry	5	96.00
PDA	5	96.00
Wireless Mouse	2	240.00
Cordless Shaver	5	96.00

When using a vehicle battery as a power source, it is strongly recommended to start the vehicle every hour or two to recharge the battery before its capacity drops too low. The inverter can operate while the engine is running, but the normal voltage drop that occurs during starting of the engine may trigger the inverter's low voltage shutdown feature.

b) Interference with Electronic Equipment

Generally, most AC products operate with the inverter just as they would with household AC power. Below is information concerning two possible exceptions:

1) Buzzing and in audio systems and radios

Some stereo systems and AM-FM radios have inadequate internal power supply filtering and “buzz” slightly when powered by the inverter. Generally, the only solution is an audio product with a higher quality filter.

2) Television interference

The inverter is shielded to minimize its interference with TV signals. However, with weak TV signals interference may be visible in the form of lines scrolling across the screen. The following should minimize or eliminate the problem:

- Increase the distance between the inverter and the TV, antenna and cables.
- Adjust the orientation of the inverter television, antenna and cables.
- Maximize TV signal strength by using a better antenna and use shielded antenna cable where possible.

c) Reference Chart

PROBLEM	CAUSE	SOLUTION
No power, no indicator.	Battery is defective	Replace battery
	Blown fuse	Check and replace fuse
	Lose cable connections	Check the connection to the battery. Tighten as required.

The red LED indicator illuminates.	AC products connected are rated at more than the Wattage load of the inverter; overload shutdown has occurred.	Reduce load.
	AC products at less than the Wattage load of the inverter, but high starting surge has caused overload shutdown.	Use a product with starting surge power within the inverter's capability.
	The voltage input from the DC power source is too low (alarm is sounding).	Charge the power source battery
	Inverter is overheated due to poor ventilation and has shut down.	Unplug inverter from DC socket and allow to be cooled for 15 minutes. Remove objects covering unit. Move the inverter to a cooler place. Reduce load if continuous operation is required. Restart.
Inverter runs small loads but not large ones.	Low voltage battery	Charge the battery
Water entered	Water entered the unit	Disconnect the inverter and wipe immediately with a dry

		cloth, or permanent damage can occur.
Alarm is sounding	Low voltage shutdown or thermal shutdown has occurred.	Allow unit to cool. Improve air circulation around unit. Locate unit to a cooler environment. Reduce load if continuous operation is required.
Measured inverter output is too low	Standard "average-reading" AC voltmeter used to measure output voltage, resulting in an apparent reading 5 to 15V too low.	Inverter's "modified sine wave" output requires "true RMS" voltmeter for accurate measurements.
	Battery voltage is too low	Recharge battery
Battery run time is less than expected	AC product power consumption is higher than rated.	Use a larger battery to make up for increased power requirement.
	Battery is old or defective.	Replace battery
	Battery is not being properly charged.	Some chargers are not able to fully recharge a battery. Make sure you use a powerful charger.

6. Specifications

a) AC Power Output

Model	**200W**	**400W**	**750W**
AC output voltage	125V AC (104V)	125V AC (104V)	125V AC (104V)
Continuous AC output power	200W	400W	750W
Maximum AC output surge power	500W	600W	800W
AC output frequency(nominal)	59~61Hz	59~61Hz	59~61Hz
AC output waveform	Modified sine wave	Modified sine wave	Modified sine wave

Model	**1000W**	**1500W**	**2000W**	**3000W**
AC output voltage	125V AC (104V)	125V AC (104V)	125V AC (104V)	125V AC (104V)
Continuous AC output power	1000W	1500W	2000W	3000W
Maximum AC output surge power	2000W	3000W	4000W	6000W
AC output frequency(nominal)	59~61Hz	59~61Hz	59~61Hz	59~61Hz
AC output waveform	Modified sine wave	Modified sine wave	Modified sine wave	Modified sine wave

b) USB Power Output

DC output voltage	5V DC

c) DC Power Specifications

Model	**200W**	**400W**	**750W**

DC input voltage range	11.0~15.0V DC	11.0~15.0V DC	11.0~14.5V DC	
Battery drain with no AC load	0.35A (at a 12V input)	0. 5A (at a 12V input)	0.5A (at a 12V input)	
Low battery alarm trigger point	11.0V	11.0V	11.0V	
Low battery shutdown point (nominal)	10.5V	10.5V	110.5V	
Low battery resume point (nominal)			12.0V	
High battery shutdown point (nominal)	15.5V	15.5V	15.5V	
fuse	25A mini fuse	25A mini slip fuse×2	25A mini slip fuse×4	
Efficiency(maximum)	85%	85%	85%	

Model	**1000W**	**1500W**	**2000W**	**3000W**
AC output voltage	105V~125V AC	105V~125V AC	105V~125V DC	105V~125V DC
Maximum AC output power	1000W	1500W	2000W	3000W
Maximum AC output surge power	2000W	3000W	4000W	6000W

AC output frequency (nominal)	59~61Hz	59~61Hz	59~61Hz	59~61Hz
AC output waveform	modified sine wave	modified sine wave	modified sine wave	modified sine wave
DC output voltage range	5V DC	5V DC	5V DC	5V DC
DC input voltage range	12.8~13.2V DC	12.8~13.2V DC	12.8~13.2V DC	12.8~13.2V DC
Battery drain with no AC load	0.6A (at a 12V input)	0. 6A (at a 12V input)	1 A (at a 12V input)	1 A (at a 12V input)
Low battery alarm trigger point	11.0.3VDC	11.0.3VDC	11.0.3VDC	11.0.3VDC
Low battery shutdown point (nominal)	10.5 0.3VDC	10.5 0.3VDC	10.5 0.3VDC	10.5 0.3VDC
Low battery resume point (nominal)	12.OV	12.OV	12.OV	12.OV
High battery shutdown point (nominal)	15.5V	15.5V	15.5V	15.5V
fuse	25A mini fuse X 5	25A mini slip fuse×7	25A mini slip fuse×10	25A mini slip fuse×10
Efficiency(maximum)	85%	85%	85%	85%

c) Physical specifications

Ambient operating temperature	32~104

range	(0 ~40)

7. Error Codes

OLP – Overload Protection
OPP – Short Circuit Protection
OUP – Over Voltage Protection
LUP – Low Voltage Protection
OCP – Over Temperature Protection